Section 9B. Sanitary Sewer Plan

Introduction

This section addresses the effect of the municipal system on the regional system, infiltration and inflow in the municipal system and the timing of the construction or expansion of the municipal system that might be required to meet the City's anticipated growth.

This section of the *Comprehensive Plan*:

- Describes the **existing** municipal sewer system**.**
- Provides an **analysis of future needs** and discusses the effect of growth and expansion on the regional system.
- Establishes **goals, policies and recommended actions** for the sanitary sewer system.

Existing System

History

In 1960, the City of Shoreview began construction of its sanitary sewer facilities. Major housing construction in the City of Shoreview began in the late 1960s. Municipal sanitary sewer facilities were extended as needed to serve proposed development.

The initial phases included connections to the City of Roseville's system at County Road D and Victoria Street and at the intersection of County Road D and Churchill Street. In subsequent years, trunk sewers were generally extended in a northerly direction from these connection points to serve new development. However, topography in the northern one-third of the city required that sanitary sewer services be provided from the northwest via the regional north suburban interceptor.

Municipal Sewer System

The City of Shoreview's municipal sanitary sewer is a conveyance system only; the City does not own or operate any sewage treatment facilities. The municipal system collects sewage from individual properties within the City limits and routes it to the regional sewage interceptor system. The regional interceptors deliver sewage to the Metropolitan Wastewater Treatment Plant in St. Paul.

The municipal sanitary sewer system is a gravity-based system consisting of pipes ranging in diameter from 8 inches to 36 inches. Pipes consist of clay, cast iron or concrete, with PVC used in more recent years. The manholes in the system are block/mortar or pre-cast concrete.

Sewer line depths in the City range from approximately 6 feet for the lateral sewers to over 65 feet for the interceptor sewers. Seventeen sewer lift stations with forcemains pump sewage in areas not serviceable by gravity (**Map 9B-4**).

There are approximately 8,765 sewer connections in the City of Shoreview. Of these connections, approximately 8,580 are residential and 185 are non-residential. Ninty-five percent of the residential connections are single-family connections (including single-family dwellings and townhomes) and five percent are multi-family connections (including duplexes, triplexes and apartments).

Shoreview currently has three properties categorized by Metropolitan Council Environmental Services (MCES) as Industrial Strength/Rate Customers. The City currently has no large (greater than 5 percent of total discharge) sewage dischargers using the municipal sanitary sewer system.

Metropolitan Council Environmental Services Interceptor System

The Shoreview sanitary sewer system flows into the MCES interceptor system where the flow is monitored and metered. **Map 9B-1** depicts the MCES interceptor system, the four sewer interceptor service districts and the locations of meter stations in the city. The interceptor system routes sewage to the Metropolitan Wastewater Treatment Plant located in St. Paul.

Individual Sewage Treatment Systems

Seventeen properties in the City use private individual sewage treatment systems. Of those properties, 16 are residential and one is non-residential. The non-residential property is a non-conforming use and has been designated for either low-density residential or medium-density residential and office uses in the future. At the time of redevelopment, connections to sanitary sewer for these properties will be required. **Map 9B-2** shows the location of properties serviced by individual sewage treatment systems.

The City seeks to prevent contamination of groundwater and surface water from these systems through a combination of regulation and education. Shoreview's Development Ordinance regulates individual sewage treatment systems. The City's individual sewage treatment system ordinance is consistent with Minnesota Pollution Control Agency (MPCA) Rule 7080 requirements including inspection and service requirements. The City ordinance also generally requires existing structures with individual sewage treatment systems to connect to the municipal sanitary sewer system within one year once sewer service becomes available. New systems are only permitted where: (1) public sanitary sewer is not available and (2) the subject property exceeds one acre. Given the extent of the public sanitary sewer system and the minimal vacant land remaining in the City, few (if any) new individual sewage treatment systems should be constructed during the life of this *Plan.* Education efforts include informing individual sewage treatment system users of the proper maintenance and use of their systems.

The City monitors the condition of the existing ISTS. Maintenance pumping records are required to be submitted, and compliance inspections are performed every three years. The low

number of private systems in the City is small enough that annual record review is sufficient to insure that system maintenance is being performed by the property owners.

Inter-Community Services

The City of Shoreview has inter-community sewer service agreements with the cities of Arden Hills, Lino Lakes, and North Oaks. The City provides sewer extensions to a few individual properties within each of these cities. At this time, no neighboring communities have requested any additional sanitary sewer extensions, and the City is not aware of any potential requests from these communities. Any future requests for inter-community sewer service extensions will be evaluated based on the impact on the municipal sewer system infrastructure and flows.

Sanitary sewer for approximately 40 residential properties in City of Shoreview, north of County Road D on the west shore of Lake Owasso, flows into Roseville. In addition, there are a small number of properties in Vadnais Heights, along the east side of Rice Street, that discharge sewage into Shoreview's system. There is no inter-community sewer service agreement or special metering for these properties. MCES estimates the volume and adjusts the City's metered flow.

Infiltration and Inflow

Water originating outside of the municipal sewer system can enter the system and add to the cost of sewage treatment. Water that originates outside of the municipal sewer system is typically referred to as infiltration and inflow (I&I). Infiltration is defined as the water entering a sewer system from the ground, whereas inflow is defined as the water discharged into a sewer system. Potential sources of infiltration and inflow include:

- Defective pipes, pipe joints, connections or manhole walls.
- Illegally connected sump pumps or foundations drains.
- Roof leaders, cellars, yard and area drains or foundation drains.
- Cooling water discharges or drains from springs and swampy areas.
- Manhole covers, cross connections from storm sewers and combined sewers, catch basins, storm water, surface runoff and street wash waters or drainage.

In 1982, Shoreview, as well as many other first- and second-ring suburbs, studied the source and extent of infiltration and inflow into their sewer system. The City believes that the extent of the infiltration and inflow problem in Shoreview is related to the age of the homes built in the city, the age of the sewer system itself and localized areas of high ground water. For example, sewers built prior to 1975 are generally more susceptible to infiltration and inflow because of the pipe/gasket materials used.

To reduce the amount of infiltration and inflow into the sewer system, the City:

- Prohibits the discharge of any roof drainage, storm water, surface water or groundwater into the municipal sewer system.
- Evaluates and upgrades the municipal sewer infrastructure to reduce infiltration and inflow as part of road reconstruction projects.
- Annually televises the sewer system to determine if and where repairs are needed.
- Actively uses pipe relining and other trenchless technologies to rehabilitate segments of the sewer system.

The City has created Residential Sump Pump and Non-Residential Roof Drain Inspection Programs in response to the concern for infiltration and inflow. These programs are intended to result in a reduction in clear water entering the City's sanitary sewer system. The City has developed strategies for reducing I&I, and corresponding Metropolitan Council Environmental Service surcharges associated sewage treatment of I&I.

Evaluation of Future Needs

System Extension

Sanitary sewer service is currently serving the vast majority of the City. The remaining unsewered properties capable of subdivision or development in the City will be served by lateral extensions of the existing municipal sanitary sewer system.

Adopted Community Forecasts

Table 9B-1 summarizes the City of Shoreview's adopted community forecasts for population, total households and employment through the year 2030.

Table 9B-1. Adopted Community Forecasts

	2010	**2020**	**2030**
Population	28,500	29,000	29,000
Households	11,000	11,300	11,300
Employment	14,200	15,800	16,800

Source: Metropolitan Council Community Forecasts

Table 9B-2 provides the expected increase in sewered households within the community by year for the next five years.

Table 9B-2. Existing Sewered Households and Projected Increase by Year

	2008	2009	2010	2011	2012	2013
Sewered Households	10,961	10,985	11,000	11,060	11,125	11,150

Source: Metropolitan Council Community Forecasts, Public Works Department Records, and the Land Use Plan

Projected Flows

Sanitary sewage flows for the City were projected for the various MCES sewer districts. The projections are based upon the adopted community forecasts for household growth; estimated household sizes based on 2000 Census data for Shoreview and adjusted to conform to regional trends in household size; and potential acres of non-residential properties based on the land use plan. Refer to **Map 9B-3** for future land use by sewer service area. Estimates for Low Density Residential Sewage generation were based on the assumptions of 85 gallons per capita per day, 2.5 residential units per acre, and 2.6 persons per unit. Estimates for Medium Density, High Density and Mixed Use Residential land uses were based on 1,500, 2,000 and 2,000 gallons per acre, respectively. The projections also assume that municipal sanitary sewer system will serve the properties currently utilizing individual sewage treatment systems by the year 2020.

Table 9B-3 shows the projected sanitary sewage flow for Shoreview beginning with existing (2007) actual flows. Sewage flow is expected to increase a total of 4 percent between 2010 and 2030. Increase in the number of households and the remaining build-out of non-residential properties will nearly be offset by the expected trend of decreasing household size. This modest increase in sewage flow over twenty years, together with improvements to reduce I&I in the system, is not expected to create any additional infrastructure needs in the municipal sewage system.

Table 9B-3. Projected Sewage Flows by District (Million Gallons/Day)

Sewer District	2008	2010	2015	2020	2025	2030	Flow Increase 2010-2030(mgd)
M 48	1.33	1.33	1.34	1.34	1.34	1.35	0.02
M 49	0.23	0.23	0.23	0.23	0.24	0.24	0.01
M 50	0.16	0.16	0.16	0.16	0.16	0.16	0
M 204	0.86	0.86	0.87	0.87	0.87	0.87	0.01
Total	2.58	2.58	2.60	2.60	2.61	2.62	0.04

Source: Public Works Department

Industrial Strength/High-Volume Customers

Shoreview currently has three properties categorized by MCES as Industrial Strength/Rate Customers. These three uses include 26 acres of Business Park and Light Industrial zoned properties. Potential or planned uses of remaining undeveloped properties or redeveloped properties make it unlikely that the number of MCES Industrial Strength/Rate Customers in the City will significantly increase prior to 2030.

Shoreview currently has no large (greater than 5 percent of total discharge) sewage dischargers using the municipal sanitary sewer system. Again, potential uses of remaining undeveloped properties or redeveloped properties make it unlikely that the number of large sewage generators in the City will significantly increase prior to 2030. In all cases, the City's development review process will continue to examine any impacts from potential industrial and/or high volume sewage generators.

Goals, Policies and Recommended Actions

Goals

1. Protect the health of the City's citizens and environment by providing quality sanitary sewer service at a reasonable cost.

2. Operate the City's sanitary sewer service so that it is economically self-sufficient and so that rates and reserves allow for an appropriate infrastructure replacement schedule.

Policies

A. Continue to plan for the short-term and long-term system needs to ensure rate stability and the economic self-sustainability of the City's sanitary sewer service.

B. Where feasible, extend sanitary sewer service to properties that currently rely on private septic systems. Link sewer service extensions to road reconstruction or other municipal infrastructure projects where possible.

C. Smaller properties least suited for individual sewage treatment systems and shoreland properties should be a priority for sewer service extension.

D. Reduce municipal and regional costs and surcharges for sewage collection and treatment by instituting measures to reduce infiltration and inflow (I&I) into the system.

Recommended Actions

1. The City shall administer Residential Sump Pump and Non-residential Roof Drain Inspection Programs to detect and reduce sources of Infiltration and Inflow (I&I) into the municipal sanitary sewer system.

2. The City will continue to systematically televise the sewer system to determine where sewer improvements may be required.

3. In accordance with existing street renewal policies, the City will replace all sewer pipes susceptible to infiltration and inflow (I&I) during any road reconstruction project.

4. The City will continue to monitor individual sewage treatment systems in the community, and to track the required maintenance of these systems. The City will also continue its efforts to educate individual sewage treatment system users on proper use and maintenance.